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United States Department of Agriculture,

DIVISION OF ENTOMOLOGY.

THE PERIODICAL CICADA IN 1897.

There is perhaps no other American insect that has become more familiar than the periodical cicada, otherwise known as the seventeen-year locust, or simply "the locust." Its appearance in enormous swarms at long, regular intervals—17 years in the more northern and 13 years in the more southern parts of the country—never fails to attract general attention. Its natural history has been so often told that it is deemed unnecessary to repeat it here, and the object of this circular is to invite the correspondents of the Division to send word regarding the appearance of the cicada so that previous records may be confirmed, the doubtful ones among them either verified or rejected, and new localities made known.

A knowledge of the exact extent of each swarm or brood of the cicada is of considerable economic importance. It is well known that the only damage inflicted by the cicadas is by hacking into the terminal twigs of trees for the purpose of ovipositing, the twigs usually dying within a week. With large forest trees the damage amounts to nothing more than a general trimming, and old orchards suffer but little more, but on young fruit trees it tells very severely, and instances are known in which newly planted orchards have been entirely destroyed. Since there is in most parts of the country only one brood of the cicada, injury to fruit trees is, therefore, expected only once every 17 years (or every 13 years in the South), but there are certain localities where two or even more broods are known to occur, each appearing at intervals of 17 years (or 13 years in the South), and where, therefore, damage to fruit trees may be expected at shorter intervals. A knowledge of this fact, as well as of the extent of each brood, would teach the orchardist not to lay out a new orchard just one or two years previous to the expected appearance of the cicadas. If this precaution has been neglected it is next to impossible to prevent the cicadas from ovipositing in the branches, especially when the orchard is in the vicinity of timber land. Still, with particularly valuable trees it is practicable to protect them by means of paper bags or muslin netting tied over the tops of the trees. The duration of the danger from the oviposition of the cicadas does not last longer than about three weeks, commencing in Ohio,

West Virginia, and Pennsylvania about the last week of May, and in Louisiana and Mississippi a fortnight or three weeks earlier.

SEVENTEEN-YEAR BROOD XV—1880-1897-1914.

The 17-year brood of the periodical cicada which appeared in 1897 has been designated by the late Dr. C. V. Riley as Brood XV. It is an old established brood, reported from Ohio as early as 1795. So far as now ascertained it occupies a pretty compact territory, embracing the southwestern corner of Pennsylvania, northern and a portion of central West Virginia, and southeastern Ohio as far as the Scioto River, thence extending in a broad strip northward through the center of Ohio to Lake Erie. The brood is also reported from Geauga and Lake counties, Ohio, and from Highland County, Va.*

The remarkable distribution in Ohio may be due to the imperfect record. As early as 1846 the late Dr. Gideon B. Smith records this brood from "twelve counties in the eastern portion of Ohio," but unfortunately fails to give the name of a single one. With our increased experience only fifteen counties of Ohio can now be enumerated. Regarding the western limit of the brood in Ohio, a very important statement by J. H. Niles, of Havana, Huron County, Ohio, was published by Dr. Riley in 1885 and deserves to be repeated here:

When the cicadas appeared in 1846, the question was raised whether they were partial to any particular geological formation. The result showed that they occupied the conglomerate, the sandstone, and the slatestone formations of eastern Ohio, not the limestone formation of western Ohio. For instance, a line drawn for the western edge of the black slate, from the city of Bucyrus, in Crawford County, and the northwest corner of Huron County and Erie County, to the east of Sandusky Bay, marked correctly the western edge of the cicada of 1880.

The brood nowhere appears on the eastern flank of the Allegheny Mountains, nor does it extend westward beyond the center of Ohio. Its territory, so far as ascertained, is not occupied by any other brood of the periodical cicada except in Pennsylvania and some adjacent counties of West Virginia, so that in the majority of the counties enumerated below the cicadas appear only once every 17 years.

Brood XV is always preceded by one year by the 17-year Brood XIV but this is known only from States west of the Mississippi River, so that no relationship seems to exist between these two broods. Brood XVI which appears always one year later than Brood XV is known from a number of localities both east and west of the territory occupied by Brood XV, but these localities are so scattered and

*The latter locality is based upon a single record and requires confirmation. In his first Missouri report Dr. Riley mentions Lewis County, Va., which is changed to Lewis County, Ky., in Bulletin 8 (first series) of the Division of Entomology. It should be Lewis County, W. Va., the authority being the unpublished "Register" of Dr. G. B. Smith which was written before West Virginia became separated from Virginia.

of so small extent that no relationship between the two broods can be pointed out. Comparisons with other 17-year broods are very tempting but are of course mere speculation in the present state of our knowledge. Still, can it be a mere coincidence that the territory occupied by Brood XX (1883-1900) is evidently a northeastward extension of that occupied by Brood XV; or are geological reasons sufficient to explain the fact that the territory occupied by Brood XV almost exactly fills the gap between the two great divisions of Brood XXII (1885-1902)?

The localities from which Brood XV has been recorded are as follows:

Pennsylvania:—Counties of Fayette and Washington.

West Virginia:—Counties of Barbour, Calhoun, Kanawha, Grant, Hardy, Harrison, Lewis, Marion, Monongalia, Ohio, Preston, Roane, Tucker.

Virginia:—County of Highland (?)

Ohio:—Counties of Belmont, Coshocton, Crawford, Erie, Fairfield, Geauga, Guernsey, Huron, Jackson, Lake, Licking, Muskingum, Perry, Pickaway, Washington.

THIRTEEN-YEAR BROOD VI—1884-1897-1910.

The 13-year Brood XV which appeared in 1897 is of small extent, but well established by many reliable records, the oldest of which dates back as far as 1806. It is confined to parts of southern Mississippi and adjacent parts of Louisiana east of the Mississippi, the particular localities being given farther on. Dr. D. L. Phares, of Woodville, Miss., has taken particular pains to ascertain the extent of this brood and his lucid and concise account already published in 1885 in Bulletin 8 (first series) of this Division, is herewith reproduced:

This western limit is the Mississippi River; the southern about 8 miles north of Baton Rouge; the eastern about 4 miles west of Greensburg, the county seat of Helena, and 4 miles west also of Liberty, in Amite County, Miss., thus extending from 15 to 50 miles from the Mississippi River, and from the vicinity of Baton Rouge, 108 miles to the northern limit of Claiborne County, Miss., perhaps even farther. They, therefore, occupy East and West Feliciana, the northern part of East Baton Rouge, the northwest corner of Livingston and the western part of St. Helena parishes, Louisiana; and Wilkinson, Adams, Jefferson, Claiborne, and parts of Amite, Franklin, and possibly parts of one or two more counties in Mississippi.

The reports received since 1885 are mostly confirmatory of Dr. Phares's statement, but Mr. Thos. F. Anderson, of St. Helena, La., writes us that the parishes, or at least parts of the parishes of Tangipahoa, Washington, and St. Tammany had to be added to the range of this brood. His statement is quite definite; still a confirmation of these new localities is desirable.

Brood VI is evidently a forerunner of the very large 13-year Brood VII which appeared in 1898 in the Mississippi Valley. The geographical range of Brood VII was mapped out in the Annual Report of this Department for 1885, and it will be seen from this map that the southern limits of Brood VII almost precisely coincide with the northern limits of our Brood VI.

The following is an enumeration of the counties from which Brood VI has been recorded:

Mississippi:—Counties of Adams, Amite, Claiborne, Franklin, Jefferson, and Wilkinson.

Louisiana:—Parishes of East Baton Rouge, East Feliciana, Livingston, St. Helena, St. Tammany (?), Tangipahoa (?), Washington (?), and West Feliciana.

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Approved:
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